

Southern African species of the genus *Hypacostemma* Linnavuori (Homoptera: Cicadellidae: Selenocephalinae)

by

J. G. THERON

Department of Entomology, University of Stellenbosch, Stellenbosch, 7600

Three new species of *Hypacostemma* Linnavuori are described, viz. *H. brevis*, *H. falcata* and *H. devia*. *H. uniformis* (Distant) and *H. viridissima* Linnavuori are redescribed and their rank as separate species established. A key to the genus is provided.

INTRODUCTION

The genus *Hypacostemma* was erected by Linnavuori (1961) for the species *viridissima* from the Tzitzikamma Forest. Subsequently, *Krisna uniformis* Distant from Natal was also referred to *Hypacostemma* by Linnavuori & Quartau (1975). More recently Linnavuori & Al-Ne'amy (1983) erroneously synonymized these two species and assigned *Hypacostemma* to a new tribe, the Hypacostemmini, of the Selenocephalinae. In the present paper three new species of these large, fairly common, shrub- and tree-living, uniformly green leafhoppers are described from southern Africa and the taxonomic characters of *H. uniformis* and *H. viridissima* are redefined.

Types of the new species are deposited in the National Collection of Insects, Plant Protection Research Institute, Pretoria (NCI) and the University of Stellenbosch Collection (US). In the figures all homologous structures are drawn to the same scale.

Key to species of *Hypacostemma*

- 1 Crown evenly rounded to face (Fig. 25); aedeagus with relatively large socle (Figs 4, 8, 11, 16) 2
- Crown fairly sharply angled with face (Fig. 22); socle of aedeagus flimsy (Fig. 20) *devia* sp. nov.
- 2 Shaft of aedeagus rather stout and slightly dorsally curved in lateral view (Figs 11, 16) 3
- Shaft of aedeagus slender and hook-shaped in lateral view (Figs 3, 9) 4
- 3 Shaft of aedeagus basally with pair of long, slender, ventral appendages, extending to apex of shaft (Figs 16, 17); pygofer lobes truncate behind (Fig. 15) *falcata* sp. nov.
- Shaft of aedeagus basally with pair of very short, inconspicuous, ventral appendages (Figs 11, 12); pygofer lobes rounded behind *brevis* sp. nov.
- 4 Shaft of aedeagus basally with pair of tooth-like, ventral appendages (Fig. 4) *uniformis* Distant
- Shaft of aedeagus basally with ventral ridge (Fig. 8) *viridissima* Linnavuori

Genus *Hypacostemma* Linnavuori**Hypacostemma** Linnavuori, 1961: 465Type-species: *Hypacostemma viridissima* Linnavuori, 1961, by original designation.

Large, uniformly pale-green to yellowish-green, cuneiform leafhoppers with head as wide as or slightly wider than pronotum. Crown medially longer than next to eyes and rounded to face (Fig. 25). Frontal region of crown shagreened, discal region smooth or weakly rugulose. Ocellus separated from adjacent eye by distance about twice its diameter. Face broader than long. Frontoclypeus shagreened, broadly wedge-shaped. Anteclypeus not extending beyond genae and lora shagreened. Ocellocular region much wider than gena below lorum. Antennae very long (Fig. 22).

Lateral margins of pronotum carinate; disc of pronotum transversely rugulose. Tegmina long, hyaline and tapering apically, with subacute apex (Fig. 5). Appendix distinct but narrow. First and second apical cells distinct, but remaining apical cells and part of subapical cells pervaded by fine reticulate venation. Spinulation of fore tibia 1 + 5 (mostly 1 + 4 in *H. devia* sp. nov.), of apex of hind femur 2 + 2 + 1.

Male terminalia not strongly sclerotized. Pygofer invaded middorsally for about half its length or more by articular membrane of anal tube. Pygofer lobe often with many macrosetae, but only in *H. devia* with appendage. Valve triangular. Plate long, sharply triangular, with uniseriate macrosetae. Style with well developed pre-apical lobe and strongly sclerotized triangular apophysis. Connective Y-shaped and intimately, though movably, connected to socle. Shaft of aedeagus slender, tubular, arising from dorsal part of large socle; latter laterally connected to pygofer lobes by large, setiferous, membranous lobes of phragma; gonopore apical.

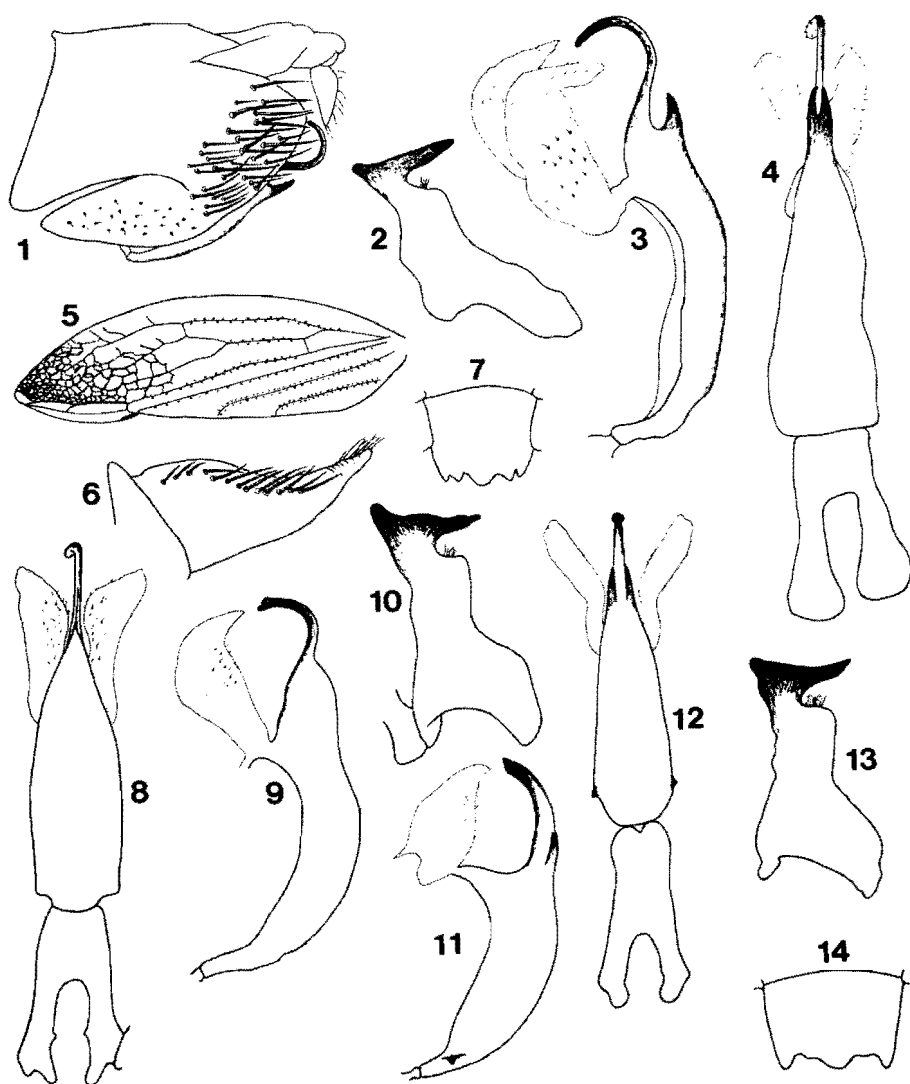
Hind margin of 7th abdominal sternite of female variable.

Hypacostemma uniformis (Distant), Figs 1–7, 25**Krisna uniformis** Distant, 1910: 241**Hypacostemma uniformis** (Distant); Linnavuori & Quartau 1975: 155

MALE. Length from apex of crown to tips of tegmina 8,75–9,75 mm; transocular width and greatest width of pronotum 2,33–2,65 mm. General body colour green; eyes testaceous. Crown medially about 1,3 times as long as next to eyes. Pygofer lobe rounded behind and bearing numerous macrosetae (Fig. 1). Plates with 10–18 uniseriate macrosetae (Fig. 6), which are sometimes multiseriate basally. Aedeagus with elongate socle, which apically, at point of origin of shaft, bears pair of characteristic short, tooth-like appendages ventrally (Figs 3, 4); shaft tubular, hook-shaped and apex slightly flared around gonopore. Connective with short, broad stem (Fig. 4). Style as in Fig. 2.

FEMALE. Length 9,66–10,58 mm; transocular width and greatest width of pronotum 2,58–2,83 mm. Hind margin of 7th abdominal sternite with median lobe and pair of smaller lateral lobes (Fig. 7).

MATERIAL EXAMINED. Distant described this species from four specimens collected in Natal. Two of these specimens, both males, are housed in the Hope Depart-



Figs 1–14. *Hypacostemma* spp. 1–7. *H. uniformis* (Distant). 1–6. Paratype ♂. 1. Pygofer, lateral view. 2. Right style, ventral view. 3. Aedeagus, lateral view. 4. Aedeagus and connective, ventral view. 5. Tegmen. 6. Plate. 7. Seventh abdominal sternite of holotype ♀. 8–10. *H. viridissima* Linnavuori. 8. Aedeagus and connective, ventral view. 9. Aedeagus, lateral view. 10. Right style, ventral view. 11–14. *H. brevis* **sp. nov.** 11–13. Holotype ♂. 11. Aedeagus, lateral view. 12. Aedeagus and connective, ventral view. 13. Right style, ventral view. 14. Seventh abdominal sternite of ♀.

ment of Entomology, Oxford and respectively carry the following collector's data: Natal, near Durban, Congella, 21.xii.1904, G. F. Leigh; Natal, Durban, 15.xi.1905, G. F. Leigh. One bears Distant's handwritten identification label; both also bear 'cotype' labels. The other two specimens (a male and a female), both with the collector's data, Natal, Bell Morley, are housed in the British Museum and bear 'syntype' labels. The female specimen also bears Distant's handwritten identification label and in the lower lefthand corner of this label, the previously apparently unnoticed word 'type' is written in very small writing. This makes this specimen the holotype and the other type-specimens can therefore be regarded as paratypes.

H. uniformis is apparently confined to Natal and additional specimens from Karkloof (near Howick), Pietermaritzburg, Durban, Umbilo, Tongaat, Hluhluwe, Eshowe and the Nkandla Forest, Zululand, were examined. In Karkloof large numbers of specimens were collected on *Laportea alatipes* N.E. Br. (Urticaceae).

Hypacostemma viridissima Linnavuouri, Figs 8–10

Hypacostemma viridissima Linnavuori, 1961: 465–466

Hypacostemma uniformis (Distant); Linnavuori & Al-Ne'amy 1983: 55 (Error)

MALE. Length from apex of crown to tips of tegmina 8,16–8,91 mm; transocular width and greatest width of pronotum 2,16–2,33 mm. General body colour green, but darker than in *H. uniformis*; eyes reddish. Crown, pygofer lobe and plate as in *H. uniformis*. Aedeagus and connective resembling that of *H. uniformis*, but socle ventrally with narrow ridge at point of origin of shaft (Figs 8, 9). Style stouter than in *H. uniformis* (Fig. 10).

MATERIAL EXAMINED. Linnavuori (1961) described this species from a male and a female collected by the Lund University Expedition in the Tzitzikamma Forest, Stormsrivierpiek, 13.i.1951. These type-specimens were not seen, but numerous specimens from the type-locality and environs could be positively identified from Linnavuori's description. Recently Linnavuori & Al-Ne'amy (1983) synonymized *H. viridissima* with *H. uniformis*, but this is an error, since the genitalic characters, geographical distribution, size and even colouration of the two species are different. The illustrations appearing in Linnavuori & Al-Ne'amy's paper are those of *H. viridissima*. This species is confined to the S.E. Coastal regions of the Cape and specimens were examined from Knysna, George, Prince Alfred Pass, Bloukrans Pass, Tzitzikamma Forest, Storms River, Misgund, Humansdorp, East London and Port St. Johns.

Hypacostemma brevis sp. nov., Figs 11–14

MALE. Length from apex of crown to tips of tegmina 8,00–8,66 mm; transocular width 2,33–2,42 mm; greatest width of pronotum 2,25–2,33 mm. Crown, colouration, pygofer lobe and plate as in *H. uniformis*. Aedeagus resembling that of *H. viridissima*, but socle shorter and stouter (Figs 11, 12); shaft weakly curved in lateral view and basally with pair of indistinct tooth-like structures. Style as in Fig. 13.

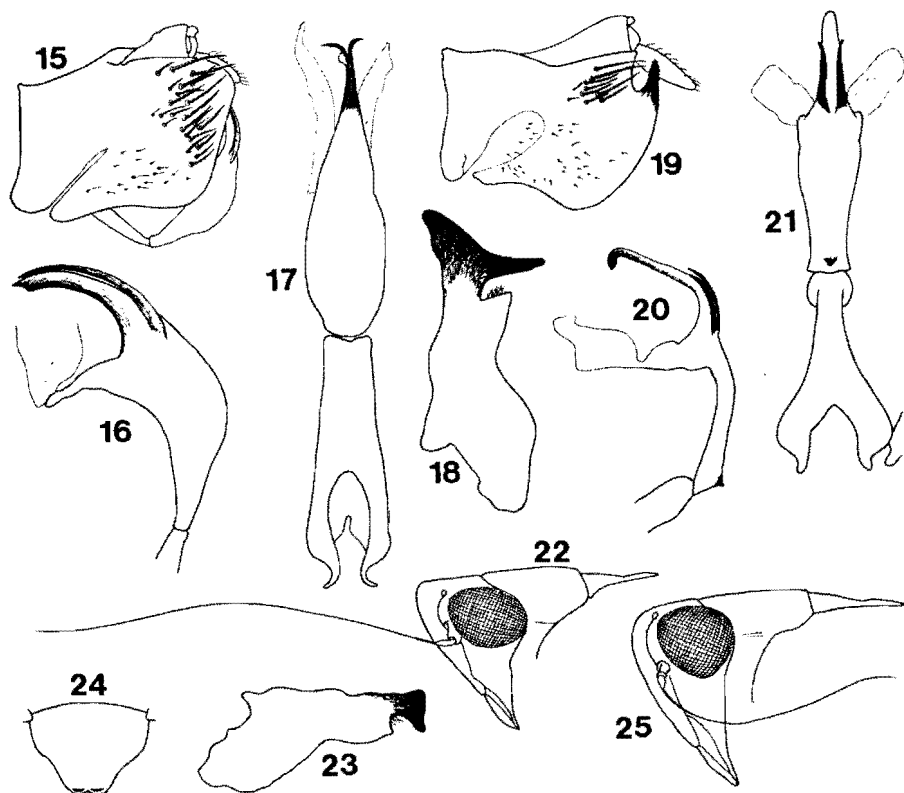
FEMALE. Length 9,25–9,41 mm; transocular width 2,58 mm; greatest width of pronotum 2,42–2,50 mm. Seventh abdominal sternite as in Fig. 14.

MATERIAL EXAMINED. SWAZILAND: Holotype ♂, Hlatikulu (by sweeping), 4.i.1969, J. G. Theron (NCI). Paratypes: 1 ♂, 2 ♀, same data as holotype; SOUTH AFRICA: 1 ♂, Louwsburg, 22.i.1981, J. G. Theron (NCI, US).

Its very distinctive aedeagus separates this species from other species of *Hypacostemma*.

***Hypacostemma falcata* sp. nov.**, Figs 15–18

MALE. Length from apex of crown to tips of tegmina 7.75 mm; transocular width 2.25 mm; greatest width of pronotum 2.16 mm. Colouration, crown and plates as in *H. uniformis*. Pygofer lobe truncate behind (Fig. 15). Aedeagus short and stout (as



Figs 15–25. *Hypacostemma* spp. 15–18. *H. falcata* sp. nov., holotype ♂. 15. Pygofer, lateral view. 16. Aedeagus, lateral view. 17. Aedeagus and connective, ventral view. 18. Right style, ventral view. 19–24. *H. devia* sp. nov. 19–23. Holotype ♂. 19. Pygofer, lateral view. 20. Aedeagus, lateral view. 21. Aedeagus and connective, ventral view. 22. Head and part of thorax, lateral view. 23. Right style, ventral view. 24. Seventh abdominal sternite of ♀. 25. *H. uniformis* (Distant), head and part of thorax, lateral view.

in *H. brevis*), but shaft ventrally with pair of long, thin, falcate appendages reaching to its apex (Figs 16, 17). Connective relatively long. Style as in Fig. 18.

FEMALE. Unknown.

MATERIAL EXAMINED: SOUTH AFRICA: Holotype ♂, Ashburton, Natal, 12.xii.1978, J. G. Theron (NCI).

This species is distinguished by the falcate appendages of the aedeagus, the truncate pygofer lobes and the relatively long connective.

***Hypacostemma devia* sp. nov.**, Figs 19–24

MALE. Length from apex of crown to tips of tegmina 7.08–8.12 mm; transocular width 2.00–2.25 mm; greatest width of pronotum 1.91–2.08 mm. Colouration varying from yellowish-green to olivaceous. Crown medially about twice as long as next eyes and fairly sharply angled with face (Fig. 22); disc distinctly flattened. Spinulation of fore tibia usually 1 + 4, rarely 1 + 5. Pygofer lobe with relatively few macrosetae, but with strongly sclerotized, sometimes dentate process at posterodorsal angle (Fig. 19). Aedeagus relatively small (Figs 20–21) and shaft with pair of flimsy appendages of variable length at base. Connective as in Fig. 21 and style as in Fig. 23. Plates as in *H. uniformis* but with rather fewer macrosetae.

FEMALE. Length 7.91–9.08 mm; transocular width 2.16–2.50 mm; greatest width of pronotum 2.08–2.41 mm. Seventh abdominal sternite as in Fig. 24.

MATERIAL EXAMINED. SOUTH AFRICA: Holotype ♂, Willowmore, 16.i.1984, J. G. Theron (NCI). Paratypes: 1 ♂, 2 ♀, same data as holotype; 2 ♂, Grahamstown, 15.xi.1980, S. Naser (on *Pappea capensis* Eckl. & Zeyh.); 1 ♂, 2 ♀, Grahamstown, 22.i.1984, T. Swanepoel (on *Rhus*); 1 ♂, Addo, 4.i.1978, J. G. H. Londt; 3 ♂, 1 ♀, Bathurst, 9.ii.1966, A. L. Capener; 1 ♂, Bathurst, 22.i.1984, J. G. Theron; 1 ♂, 2 ♀, Graaff-Reinet, 18.i.1984, J. G. Theron; 2 ♂, 1 ♀, Bergkwagga Park, Cradock, 19.i.1984, J. G. Theron; 1 ♂, 1 ♀, Steytlerville, 15.ii.1966, A. L. Capener (NCI, US).

H. devia is an aberrant species, differing from all known *Hypacostemma* spp. in the structure of the head, spinulation of the fore tibia, possession of strong pygofer processes, the shape of the styles, flimsiness of the aedeagus and the shape of the 7th abdominal sternite of the female.

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